

WHAT IS CLAIMED IS:

1 1. A method of preparing a nucleic acid array on a support, wherein
2 each nucleic acid occupies a separate known region of the support, said synthesizing
3 comprising:
4 (a) activating a region of the support;
5 (b) attaching a nucleotide to a first region, said nucleotide having a
6 masked reactive site linked to a protecting group;
7 (c) repeating steps (a) and (b) on other regions of said support whereby
8 each of said other regions has bound thereto another nucleotide comprising a masked
9 reactive site link to a protecting group, wherein said another nucleotide may be the same
10 or different from that used in step (b);
11 (d) removing the protecting group from one of the nucleotides bound to
12 one of the regions of the support to provide a region bearing a nucleotide having an
13 unmasked reactive site;
14 (e) binding an additional nucleotide to the nucleotide with an unmasked
15 reactive site;
16 (f) repeating steps (d) and (e) on regions of the support until a desired
17 plurality of nucleic acids is synthesized, each nucleic acid occupying separate known
18 regions of the support;
19 wherein the surface of said substrate is maintained in a position which is vertical
20 or within about 30 degrees of vertical, and
21 wherein the substrate is rotated around an axis perpendicular to said surface by an
22 amount of from about 20 degrees to about 180 degrees, said rotating being
23 done prior to, coincident with or subsequent to at least one of said
24 attaching or binding steps.

1 2. A method in accordance with claim 1, wherein said rotating is
2 conducted prior to, coincident with or subsequent to at least 50% of said attaching or
3 binding steps.

1 3. A method in accordance with claim 1, wherein said rotating is
2 conducted prior to, coincident with or subsequent to at least 80% of said attaching or
3 binding steps.

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1 4. A method in accordance with claim 1, wherein said rotating is in an
2 amount of from about 75 to about 105 degrees.

1 5. A method in accordance with claim 1, wherein said rotating is in an
2 amount of about 90 degrees.

1 6. A method in accordance with claim 1, wherein said interface is
2 vertical or within about 10 degrees of vertical and said rotating is in an amount of about
3 90 degrees.

1 7. A method in accordance with claim 1, wherein said substrate is a
2 substantially square planar silica chip, said interface is vertical or within about 10 degrees
3 of vertical and said rotating is in an amount of about 90 degrees.

1 8. A method in accordance with claim 7, wherein said substantially
2 square planar silica chip is held in a vertical position with one of the four square vertices
3 pointing downward.

1 9. A method in accordance with claim 1, wherein at least 10 different
2 nucleic acids are formed on said surface.

1 10. A method in accordance with claim 1, wherein at least 100
2 different nucleic acids are formed on said surface.

1 11. A method in accordance with claim 1, wherein at least 1000
2 different nucleic acids are formed on said surface.

1 12. A method in accordance with claim 1, wherein at least 10,000
2 different nucleic acids are formed on said surface.

1 13. A method in accordance with claim 1, wherein at least 100,000
2 different nucleic acids are formed on said surface.

1 14. A method in accordance with claim 1, wherein each different
2 nucleic acid is in a region having an area of less than about 1 cm².

1 15. A method in accordance with claim 1, wherein each different
2 nucleic acid is in a region having an area of less than about 1 mm².